

Notice of Allowability

Application No.

09/905,450

Applicant(s)

IWAI ET AL.

Examiner

Art Unit

Paulos M. Natnael

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment and RCE received 4/11/05.
2. ☒ The allowed claim(s) is/are 1,3-12, renumbered as 1-11.
3. ☒ The drawings filed on 13 July 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

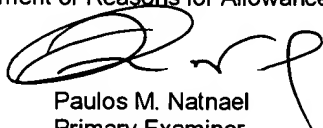
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Paulos M. Natnael
Primary Examiner
Art Unit: 2614

DETAILED ACTION

Allowable Subject Matter

1. Claims 1, 3-12 are allowed.
2. The following is an examiner's statement of reasons for allowance: the prior art fails to disclose a camera calibration device, comprising: an image holding device for holding images obtained by shooting a plane, where a known pattern is drawn, with base camera and detection camera, at at least three view points free from any spatial positional restriction, a parameter calculating device for calculating parameters necessary for distance measurement in the stereo system based on the images held by the image holding part, wherein a parameter calculating device comprises: a first part for presuming distortion parameters of the base camera and the detection camera by the use of the shot images; a second part for calculating projective transformation matrixes to project the shot images respectively onto predetermined virtual planes; a third part for calculating internal parameters of the base camera on the basis of the projective transformation matrixes obtained by the second part with regard to the images from the base camera; a fourth part for presuming the position of the shot plane based on both the internal parameters of the base camera calculated by the third part and the images obtained from the base camera; and a fifth part for calculating projection matrixes for the detection camera based on both parameters of the plane position presumed by the fourth part and the images obtained from the detection camera, as in claim 1; and,

a camera calibration method for calibrating a stereo system, which includes a base camera and a detection camera, by using images obtained by shooting a plane, where a known pattern is drawn, with the individual cameras at at least three view points free from any spatial positional restriction, the method comprising the steps of: presuming distortion parameters of the base camera and the detection camera by using the images thus obtained; calculating projective transformation matrixes to project the images respectively onto predetermined virtual planes; calculating internal parameters of the base camera based on the projective transformation matrixes obtained during the step of calculating projective transformation matrixes with regard to the images from the base camera; presuming the position of the shot plane based on both the internal parameters of the base camera calculated at the step of calculating internal parameters and the images obtained from the base camera; and calculating projection matrixes for the detection camera based on both parameters of the plane position presumed at the step of presuming and the images obtained from the detection camera, as in claims 6 and 10.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 10:00am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (571)272-7353. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paulos M. Natnael
Primary Examiner
Art Unit 2614

June 15, 2005